UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,659	07/14/2004	Mark E Marler	60469-166;OT-5016	2290

64779 7590 06/20/2007

CARLSON GASKEY & OLDS
400 W MAPLE STE 350
BIRMINGHAM, MI 48009

EXAMINER	
PICO, ERIC E	

ART UNIT	PAPER NUMBER
3654	

MAIL DATE	DELIVERY MODE
06/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/501,659
Filing Date: July 14, 2004
Appellant(s): MARLER ET AL.

David J. Gaskey
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 02/08/2007 appealing from the Office action mailed 04/21/2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,364,061	Baranda et al.	4-2002
8-247221	Yaginuma	9-1996

6,199,666	Aulanko et al.	3-2001
4,647,278	Hull	3-1987

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

1. Claim(s) 1, 3-6, 9, 11, and 12 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Baranda et al. U.S. Patent No. 6364061 in view of Yaginuma JP Application No. 8-247221.

2. **Regarding claim 1**, Baranda et al. discloses an elevator system having a belt that travels over a drive sheave.

3. Baranda et al. discloses in the background of the invention a belt, referred to as steel ropes, that travels over a drive sheave the diameter D for the sheave being at least 320 mm (380 mm for ANSI).

4. Baranda et al. further discloses a drive sheave 24 ranging from 380 mm due to ANSI in Column 1, Lines 42-45 to 64 mm due to a theoretical 80% reduction of a 320 mm diameter sheave during the instance for a sheave typical low rise gearless elevator system using three tension members, each with five 3 mm aramid fiber ropes, Column 7, Lines 34-44.

5. Baranda et al. is silent concerning a belt with a plurality of grooves as well as a groove width to sheave diameter ratio less than about .015.

6. Yaginuma teaches a belt 10 with a plurality of grooves 13 on one side of the belt 10 that travels over a drive sheave 20.

7. Yaginuma further teaches the width b of the grooves 13 on the belt 10 to be 1.5 mm in Paragraph [0009].

8. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the belt disclosed in the background of the invention of Baranda et al. with a plurality of grooves having a width of 1.5 mm as taught by Yaginuma yielding a groove width to sheave diameter ratio of .0047 (.0039 for ANSI) to reduce the noise of impact generated when the belt makes contact with the drive sheave these steps would result from the design of this device in its normal and expected fashion.

9. Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the belt disclosed Baranda et al. with a plurality of grooves having a width of 1.5 mm as taught by Yaginuma yielding a groove width to sheave diameter ratio between .023 (due to a theoretical 80% reduction of a 320 mm diameter sheave, Column 7, Lines 34-44) and .004 (due to a 380 mm diameter sheave for ANSI, Column 1, Lines 42-45) to reduce the noise of impact generated when the belt makes contact with the drive sheave these steps would result from the design of this device in its normal and expected fashion.

10. **Regarding claim 3**, Baranda et al. further discloses a drive sheave to be at least 320 mm due to elevator safety codes in Column 1, Lines 42-45

11. Baranda et al. is silent concerning groove width to sheave diameter ratio less than about .008.

12. Yaginuma further teaches the width b of the grooves 13 on the belt 10 to be 1.5 mm in Paragraph [0009].

13. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the belt taught by Yaginuma to the elevator drive sheave disclosed by Baranda et al. yielding a groove width to sheave diameter ratio of .005 to reduce the noise of impact generated when the belt makes contact with the drive sheave these steps would result from the design of this device in its normal and expected fashion.

14. **Regarding claim 4**, Baranda et al. further discloses a drive sheave to be at least 320 mm due to elevator safety codes in Column 1, Lines 42-45.

15. Baranda et al. is silent concerning groove width to sheave diameter ratio between .001 and .015.

16. Yaginuma further teaches the width b of the grooves 13 on the belt 10 to be 1.5 mm in Paragraph [0009].

17. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the belt taught by Yaginuma to the elevator drive sheave disclosed by Baranda et al. yielding a groove width to sheave diameter ratio of .005 to reduce the noise of impact generated when the belt makes contact with the drive sheave these steps would result from the design of this device in its normal and expected fashion.

18. **Regarding claim 5**, Baranda et al. further discloses a drive sheave to be at least 320 mm due to elevator safety codes in Column 1, Lines 42-45.

19. Baranda et al. silent concerning a ratio of groove width to sheave diameter based upon an expected speed of elevator cab travel.

20. Yaginuma further teaches the width b of the grooves 13 on the belt 10 to be 1.5 mm in Paragraph [0009].

21. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the belt taught by Yaginuma to the elevator drive sheave disclosed by Baranda et al. yielding a groove width to sheave diameter ratio of .005 based upon an expected speed to reduce the noise of impact generated when the belt makes contact with the drive sheave these steps would result from the design of this device in its normal and expected fashion.

22. **Regarding claim 6**, Baranda et al. further discloses a drive sheave to be at least 320 mm due to elevator safety codes in Column 1, Lines 42-45.

23. Baranda et al. is further silent concerning a ratio to be in a first range when an expected speed is a first speed and a ratio to be in a second higher range when an expected speed is a second, slower speed.

24. Yaginuma further teaches the width b of the grooves 13 on the belt 10 to be 1.5 mm in Paragraph [0009].

25. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the belt taught by Yaginuma to the elevator drive sheave disclosed by Baranda et al. yielding a groove width to sheave diameter ratio of .005 based upon an expected speed to reduce the noise of impact generated when the belt makes contact with the drive sheave these steps would result from the design of this device in its normal and expected fashion.

26. It would have been obvious to one of ordinary in the art at the time of the invention was made to select a ratio to be in a first range when the expected speed is a first speed and selecting a ratio to be in a second higher range when the expected speed is a second, slower speed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art. *In re Aller, 105 USPQ 233.*

27. **Regarding claim 9**, Baranda et al. discloses an elevator system, comprised of a cab 14

28. Baranda et al. discloses a belt 22 that supports the cab 14 and facilitates movement of the cab 14.

29. Baranda et al. discloses in the background of the invention a belt, referred to as steel ropes, that travels over a drive sheave the diameter D for the sheave being at least 320 mm (380 mm for ANSI) in Column 1, Lines 42-45.

30. Baranda et al. further discloses a drive sheave 24 ranging from 380 mm due to ANSI in Column 1, Lines 42-45 to 64 mm due to a theoretical 80% reduction of a 320 mm diameter sheave during the instance for a sheave typical low rise gearless elevator system using three tension members, each with five 3 mm aramid fiber ropes, Column 7, Lines 34-44.

31. Baranda et al. is silent concerning the belt having grooves and a ratio of the groove width to the sheave diameter less than about .015.

32. Yaginuma further teaches a belt 10 having a plurality of spaced grooves 13 on one side of the belt 10.

33. Yaginuma further teaches the width b of the grooves 13 on the belt 10 to be 1.5 mm in Paragraph [0009].

34. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the belt disclosed in the background of the invention of Baranda et al. with a plurality of grooves having a width of 1.5 mm as taught by Yaginuma yielding a groove width to sheave diameter ratio of .0047 (.0039 for ANSI) to reduce the noise of impact generated when the belt makes contact with the drive sheave these steps would result from the design of this device in its normal and expected fashion.

35. Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the belt disclosed Baranda et al. with a plurality of grooves having a width of 1.5 mm as taught by Yaginuma yielding a groove width to sheave diameter ratio between .023 (due to a theoretical 80% reduction of a 320 mm diameter sheave, Column 7, Lines 34-44) and .004 (due to a 380 mm diameter sheave for ANSI, Column 1, Lines 42-45) to reduce the noise of impact generated when the belt makes contact with the drive sheave these steps would result from the design of this device in its normal and expected fashion.

36. **Regarding claim 11**, Baranda et al. further discloses a drive sheave to be at least 320 mm due to elevator safety codes in Column 1, Lines 42-45.

37. Baranda et al. is further silent concerning the belt having grooves and a ratio of the groove width to the sheave diameter less than about .008.

38. Yaginuma further teaches the width b of the grooves 13 on the belt 10 to be 1.5 mm in Paragraph [0009].

39. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the belt taught by Yaginuma to the elevator drive sheave disclosed by Baranda et al. yielding a groove width to sheave diameter ratio of .005 to reduce the noise of impact generated when the belt makes contact with the drive sheave.

40. **Regarding claim 12**, Baranda et al. further discloses a drive sheave to be at least 320 mm due to elevator safety codes in Column 1, Lines 42-45.

41. Baranda et al. is further silent concerning the belt having grooves and a ratio of the groove width to the sheave diameter is between .001 and .015.

42. Yaginuma further teaches the width b of the grooves 13 on the belt 10 to be 1.5 mm in Paragraph [0009].

43. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the belt taught by Yaginuma to the elevator drive sheave disclosed by Baranda et al. yielding a groove width to sheave diameter ratio of .005 to reduce the noise of impact generated when the belt makes contact with the drive sheave.

44. Claim(s) 7 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Baranda et al. U.S. Patent No. 6364061 in view of Yaginuma JP Application No. 8-247221 as applied to claim 5 above, and further in view of Aulanko et al. U.S. Patent No. 6199666.

45. **Regarding claim 7**, Baranda et al. further discloses a drive sheave to be at least 320 mm due to elevator safety codes in Column 1, Lines 42-45.

46. Baranda et al. is silent concerning the elevator system having expected speed of approximately 1 m/s and the sheave diameter and a ratio of the groove width to the sheave diameter less than about .008.

47. Yaginuma further teaches the width b of the grooves 13 on the belt 10 to be 1.5 mm in Paragraph [0009].

48. Aulanko et al. teaches in the background of the invention an elevator system having expected speed of approximately 1 m/s

49. Baranda et al. teaches an elevator drive mechanism providing an elevator system with an expected speed of approximately 1 m/s in Column 1, Lines 42-45.

50. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the belt taught by Yaginuma to the elevator drive sheave disclosed by Baranda et al. yielding a groove width to sheave diameter ratio of .005 based upon an expected speed of approximately 1 m/s taught by Aulanko et al. to reduce the noise of impact generated when the belt makes contact with the drive sheave these steps would result from the design of this device in its normal and expected fashion.

51. Claim(s) 8, 13, 14 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Baranda et al. U.S. Patent No. 6364061 in view of Yaginuma JP Application No. 8-247221 as applied to claim 1 and 9 above, and further in view of Hull U.S. Patent No. 4647278.

52. **Regarding claim 8**, Baranda et al. is silent concerning fillets at the edges of each grooves.

53. Hull teaches a belt 20 with a plurality of grooves 28 provided with a fillet 46 at the edges of each groove 28.

54. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide fillets taught by Hull to the belt disclosed by Baranda et al. to improve the belt life and reduce the noise during operation.

55. **Regarding claim 13**, Baranda et al. is further silent concerning fillets at the edges of each grooves.

56. Hull further teaches a belt 20 with a plurality of grooves 28 provided with a fillet 46 at the edges of each groove 28.

57. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide fillets taught by Hull to the belt disclosed by Baranda et al. to improve the belt life and reduce the noise during operation.

58. **Regarding claim 14**, Baranda et al. is further silent concerning fillets at the edges of each groove having a radius of curvature that's is between about 0.1 mm and about 0.5 mm.

59. Hull further teaches the fillets 46 each having a radius of curvature of 0.047 in (1.1938 mm) which is between about 0.1 mm and about 0.5 mm.

60. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide fillets taught by Hull to the belt disclosed by Baranda et al. to improve the belt life and reduce the noise during operation.

61. Claim(s) 15 and 16 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Baranda et al. U.S. Patent No. 6364061 in view of Hull U.S. Patent No. 4647278.

62. **Regarding claim 15**, Baranda et al. discloses an elevator belt assembly 22 comprising, a plurality of cords 26 aligned generally parallel to a longitudinal axis of the elevator belt 22 and a jacket 28 over the cords 26, the plurality of cords 26, the jacket 28, and the elevator belt 22 each having a first longitudinal end that is separate and distinct from a second, opposite longitudinal end, shown in Figure 1.

63. Baranda et al. is silent concerning the jacket including a plurality of grooves spaced longitudinally on at least one side of the jacket, the grooves including a fillet near the one side of the jacket.

64. Hull teaches a plurality of cords not numbered but shown in the load carrying section 23 in Figures 1-3 aligned generally parallel to a longitudinal axis of the belt 20.

65. Hull further teaches a jacket over the cords 21, 22, 23, the jacket 21, 22, 23 including a plurality of grooves 28 spaced longitudinally on at least one side of the jacket 21, 22, 23, the grooves 28 including a fillet 46 near the one side of the jacket 21, 22, 23.

66. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the jacket disclosed by Baranda et al. with a plurality of grooves spaced longitudinally on at least one side of the jacket, the grooves

including a fillet near the one side of the jacket as taught by Hull to reduce the noise of impact generated when the belt makes contact with the drive sheave.

67. **Regarding claim 16**, Baranda et al. is silent concerning fillets having a radius of curvature that is the same.

68. Hull further teaches each fillet 46 has a radius of curvature that is the same (Column 4, Lines 43-47).

69. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the jacket disclosed by Baranda et al. with grooves including fillets having a radius of curvature that is the same as taught by Hull to reduce the noise of impact generated when the belt makes contact with the drive sheave.

70. Claim(s) 17 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Hull U.S. Patent No. 4647278.

71. **Regarding claim 17**, Hull discloses a belt assembly, comprising a plurality of cords not numbered but shown in the load carrying section 23 in Figures 1-3 aligned generally parallel to a longitudinal axis of the belt 20.

72. Hull further discloses a jacket over the cords 21, 22, 23, the jacket 21, 22, 23 including a plurality of grooves 28 spaced longitudinally on at least one side of the jacket 21, 22, 23, the grooves 28 including a fillet 46 near the one side of the jacket 21, 22, 23.

73. Hull further discloses fillets having a radius of curvature of 0.047 in (1.1938 mm) in Column 4, Lines 43-47.

74. Hull is silent concerning transverse fillets having a radius of curvature between about 0.1 mm and about 0.5 mm.

75. Hull teaches longitudinal fillets having a radius of curvature of 0.004 in (0.1016 mm) in Column 3, Lines 67-68 and Column 4, Line 1 which is between about 0.1 mm and about 0.5 mm

It would have been obvious to one of ordinary skill in the art at the time of the invention to make the radius of curvature or the transverse fillets disclosed by Hull with a radius of curvature of 0.004 in taught by Hull to increase the amount of material providing a longer life span.

(10) Response to Argument

Applicant's arguments filed 02/08/2007 have been fully considered but they are not persuasive.

In response to applicant's argument, "The Baranda, et al. reference expressly teaches away from using the large sized sheaves (associated with traditional, round steel ropes) when implementing a flat belt as disclosed in the Baranda, et al. reference" the office relies upon "diameter D for the sheave being at least 320 mm (380 mm for ANSI)" disclosed in the background of invention by Baranda et al. which includes traditional round steel ropes, it is noted that the features upon which applicant relies (i.e., ***flat*** belt) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Furthermore, the argument that Baranda et al. teaches away from Yaginuma relies upon the assertion that because Baranda et al. discusses the advantages of "reduced sized diameter sheaves", Baranda et al. teaches away from Yaginuma. This argument is without merit because, while the preferred embodiment of Baranda et al. does show reduced sized diameter sheaves, a statement indicating the desirability of having a drive sheave ranging from 380 mm due to ANSI in Baranda et al. Column 1, Lines 42-45 to 64 mm due to a theoretical 80% reduction of a 320 mm diameter sheave during the instance for a sheave typical low rise gearless elevator system using three tension members, each with five 3 mm aramid fiber ropes, in Baranda et al. Column 7, Lines 34-44 in no way criticizes, discredits, or otherwise discourages the solution a drive sheave ranging from 380 to 64 mm yielding a groove width to sheave diameter ratio between .023 and .004 which yields values less than about .015 claimed. Baranda et al., therefore, in no way teaches away from Yaginuma.

In response to applicant's argument that there is nothing in the prior art to suggest combining Baranda et al. in view of Hull. The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. Firstly, it should be noted that there is no requirement that an express, written suggestion to combine must appear in prior art references before a finding of obviousness. In addition to the teachings of the references themselves, the suggestion to

combine references may be found in the nature of the problem to be solved or the knowledge of persons of ordinary skill in the art. Furthermore, while there must be a motivation to make the claimed invention, there is no requirement that the prior art provide the same reason as the applicant to make the claimed invention. In this case, the suggestion to combine Baranda et al. in view of Hull comes from Hull "the inner surface of the compression section of such a belt construction can have the plurality of transversely disposed and alternately spaced apart projections and grooves formed therein with particular dimensions in relation to the particular dimensions of the longitudinally disposed and alternately spaced apart projections and grooves thereof so as to improve the belt life of the resulting belt" Column 1, Lines 32-44.

In response to applicant's argument that there is nothing in the prior art to suggest modifying Hull. The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. Firstly, it should be noted that there is no requirement that an express, written suggestion to combine must appear in prior art references before a finding of obviousness. In addition to the teachings of the references themselves, the suggestion to combine references may be found in the nature of the problem to be solved or the knowledge of persons of ordinary skill in the art. Furthermore, while there must be a motivation to make the claimed invention, there is no requirement that the prior art provide the same

reason as the applicant to make the claimed invention. In this case, the suggestion to modify Hull comes from knowledge generally available to one of ordinary skill in the art that additional material increases the life span.

It would have been obvious to one of ordinary skill in the art at the time of the invention to make the radius of curvature or the transverse fillets disclosed by Hull with a radius of curvature of 0.004 in taught by Hull to increase the amount of material providing a longer life span.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See In re McLaughlin, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Eric E. Pico

PATRICK MACKEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600

Conferees:

Patrick Mackey

Meredith Petravick